

**O-2013**  
**PLOT A ROUTE ON A SECTIONAL CHART**

**CONDITIONS**

You are an Observer trainee and must plot a simple route on a sectional chart.

**OBJECTIVES**

Plot a course on a sectional chart, select checkpoints along a route, and calculate how long it will take to fly the route.

**TRAINING AND EVALUATION**

**Training Outline**

1. As a Mission Observer trainee, knowing how to plot a route on a sectional chart is essential in order to assist the pilot, and help maintain situational awareness.
2. Plot the course. To determine a heading, locate the departure and destination points on the chart and lay the edge of a special protractor, or *plotter*, along a line connecting the two points. Use a marker to trace the route. Read the true course for this leg by sliding the plotter left or right until the center point, or grommet, sits on top of a line of longitude. When the course is more to the north or south, you can measure it by centering the grommet on a parallel of latitude, then reading the course from the inner scale that's closer to the grommet.
3. Distance. To determine the distance you're going to travel, lay the plotter on the route and read the distance using the scale that's printed on the plotter's straight edge: one edge measures nautical miles and the other statute miles.
4. Flight time. To determine the time it will take to fly between any two points, divide the distance (in nm) by the proposed airspeed (in knots).
5. Checkpoints. There are a number of ways you can add information to your chart that will help during the flight. Tick marks along the course line at specific intervals will help you keep track of your position during flight (situational awareness). Some individuals prefer five- or ten-nautical mile (nm) intervals for tick marks, while others prefer two- or four-nm intervals. Four-nautical mile spacing works well for aircraft that operate at approximately 120 knots. Since the 120-knot airplane travels 2 nm every minute, each 4 nm tick mark represents approximately two minutes of flight time. On the left side of the course line you have more tick marks, at five-nm intervals, but measured backward from the destination. In flight, these continuously indicate distance remaining to the destination, and you can easily translate that into the time left to your destination.

The next step in preparing the chart is to identify *checkpoints* along the course; you can use these to check your position on- or off-course, and the timing along the leg. Prominent features that will be easily seen from the air make the best checkpoints, and many like to circle them or highlight them with a marker in advance. You should select easy (large) targets such as tall towers, cities and towns, major roads and railroads, and significant topological features such as lakes and rivers. Try not to select checkpoints that are too close together. During a mission, checkpoint spacing will be controlled by the search altitude and weather conditions and visibility at the time of the flight.

**Additional Information**

More detailed information on this topic is available in Chapter 8 of the MART.

## Evaluation Preparation

**Setup:** Provide the student with a sectional chart and a plotter. Give the student two points on the chart.

**Brief Student:** You are an Observer trainee asked to plot a course, select checkpoints along the route, and calculate time in flight.

## Evaluation

### Performance measures

### Results

Given a sectional chart, a plotter, and two points on the chart (e.g., two airports):

- |   |   |   |
|---|---|---|
| 1. Plot a course between the two points.  | P | F |
| 2. Select checkpoints along the route. Discuss the reason you selected the checkpoints.   | P | F |
| 3. Calculate the time it will take an aircraft (120 knots with no wind) to fly the route. | P | F |

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.